

REMARKS**Formalities**

Claims 22-26 have been allowed. Claims 27-31 were rejected. Claims 1-21 and 28-31 have been canceled. Claim 27 has been amended. The amendments to the claims do not add or constitute new matter. Support for the amendments may be found throughout the specification and originally filed claims. More particularly, support for the amendment to claim 27 may be found, for example, at page 9, line 25 through page 12, line 30 and at page 47, line 24 through page 48, line 28, of the specification.

The foregoing amendments are made solely to expedite prosecution of the instant application, and are meant to constitute a proper response to the final rejection. The amendments are not intended to limit the scope of the invention. Further, the amendments to the claims are made without prejudice to the pending or now canceled claims or to any subject matter pursued in a related application. The Applicant reserves the right to prosecute any canceled subject matter at a later time or in a later filed divisional, continuation, or continuation-in-part application.

Upon entry of the amendment, 22-27 are pending in the instant application.

Rejections***Rejection under 35 U.S.C. § 112, second paragraph***

The Examiner rejected claims 27 and 28 under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Applicant respectfully traverses this rejection.

Specifically, the Examiner asserts that the claims are allegedly incomplete for omitting essential steps, such omission amounting to a gap between the steps. More particularly, the Examiner states that the claims omit the step of “the selection of ES cells that undergo homologous recombination.” Further, the Examiner states that recitation of the phrase “wherein the pseudopregnant mouse gives birth” renders the claims indefinite in that a pseudopregnant mouse cannot give birth. The Applicant disagrees with the Examiner’s conclusions, and submits that the method recited in claim 27 is definite and clearly points out the steps necessary for the skilled artisan to utilize the method. However, as the rejection is final, Applicant has overcome

the rejection by canceling claim 28 and amending claim 27 to include the allegedly omitted step. Applicant respectfully requests withdrawal of the rejection.

Applicant submits that the pending claims are definite and particularly point out and distinctly claim the subject matter regarded as the invention in accordance with 35 U.S.C. § 112, second paragraph.

Rejection under 35 U.S.C. § 103

Claims 29-31 were rejected as being unpatentable under 35 U.S.C. § 103(a) based upon the teachings of Mansour *et al.*, 1988, *Nature* 336(24):348-352 (“Mansour”), in view of Theodosiou *et al.*, 1996, *Human Molecular Genetics* 5(5):675-684 (“Theodosiou”). Applicant respectfully traverses this rejection.

Mansour describes a general approach for isolating embryonic stem cells containing a targeted mutation in a gene, provided that a cloned fragment of the gene is available. Specifically, Mansour teaches the targeted disruption of the *hprt* gene and the proto-oncogene *int-2* in mouse embryo-derived stem cells by homologous recombination using targeting constructs pRV9.1/TK and pINT-2-N/TK, respectively. The Examiner concedes, however, that Mansour does not teach how to make an NTTP1 targeting construct and knockout mouse.

According to the Examiner, Theodosiou teaches the molecular cloning and characterization of NTTP1, a member of the MAP kinase phosphatase family, and describe the nucleic acid and amino acid sequence encoding NTTP1. Theodosiou also discloses that NTTP1 belongs to a dual-specificity tyrosine/threonine phosphatase family involved in MAP kinase signal transduction pathways.

The Examiner has rejected claims 29-31 for the same reasons as applied to the obviousness rejection of claims 1-9 previously. In the previous Office Action (dated June 3, 2003), the Examiner asserted that the ordinary artisan would have been motivated to make a NTTP1 knockout construct for making a transgenic knockout mouse in order to study the precise role that NTTP1 plays in cell signaling, as suggested by Theodosiou. The Examiner further asserted that the ordinary artisan would have had a reasonable expectation of success because of the teachings of Mansour and Theodosiou, in light of the high level of skill in the art. The Applicant respectfully disagrees. However, in order to overcome the final rejection, Applicant has canceled claims 29-31 without prejudice.

As the rejection under 35 U.S.C. § 103 is no longer relevant, and pending claims 22-27 are not obvious in view of the sole or combined teachings of Mansour or Theodosiou, Applicant respectfully requests withdrawal of the rejection under 35 U.S.C. § 103.

Objections

Claim 28 has been objected to by the Examiner under 37 C.F.R. § 1.75 as being a substantial duplicate of claim 25. Applicants disagree. However, in light of the cancellation of claim 28, Applicant has overcome the objection.

It is believed that the claims are currently in condition for allowance, and notice to that effect is respectfully requested. The Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1271 under Order No. R-690.

Respectfully submitted,

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Kelly L. Quast
Kelly L. Quast, Reg. No. 52,141

Deltagen, Inc.
1031 Bing Street
San Carlos, CA 94070
(650) 569-5100



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10/005,858	12/04/2001	Keith D. Allen	R-690	2822

7590 12/02/2003
DELTAGEN, INC.
740 Bay Road
Redwood City, CA 94063



EXAMINER

QIAN, CELINE X

ART UNIT PAPER NUMBER

1636

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

FINAL OFFICE ACTION
RESP DUE 2-MARCH-04
RECEIVED
DEC - 8 2003
BY: [Signature]

Office Action Summary



Application No.

10/005,858

Applicant(s)

ALLEN, KEITH D.

Examiner

Celine X Qian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-13, 18-31 is/are pending in the application.
- 4a) Of the above claim(s) 10-13 and 18-21 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-26 is/are allowed.
- 6) ☒ Claim(s) 27-31 is/are rejected.
- 7) ☒ Claim(s) 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Claims 10-13, 18-31 are pending in the application. Claims 10-13, 18-21 are withdrawn from consideration for being directed to non-elected subject matter. Claims 22-31 are currently under examination.

This Office Action is in response to the Amendment filed on 9/8/03.

Response to Amendment

The rejection of claims 1-9 and 14-17 under 35 U.S.C. 112 1st paragraph is moot in light of Applicant's cancellation of the claims.

The rejection of claims 1, 2, 8, 14 and 15 under 35 U.S.C. 112 2nd paragraph is moot in light of Applicant's cancellation of the claims.

The rejection of claims 1-9 under 35 U.S.C. 103 (a) is moot in light of Applicant's cancellation of the claims.

Claims 27 and 28 are rejected under 35 U.S.C. 112 2nd paragraph for reasons discussed below.

Claims 29-31 are rejected under 35 U.S.C. 103 (a) for reasons set forth of the record mailed on 6/3/03 and further discussed below.

Claim 28 is objected to for reasons discussed below.

New Grounds of Rejection Necessitated by Applicant's Amendment

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 27 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the selection of ES cells that undergo homologous recombination.

The recitation of "wherein the pseudopregnant mouse gives birth" renders the claims indefinite because a pseudopregnant mouse cannot give birth. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansour et al. (1988, Nature, vol. 336, No. 24, 348-352), in view of Theodosiou et al. (1996, Human Molecular Genetics, vol.5, no.5, pages 675-684).

Claims 29-31 are rejected under 35 U.S.C. 103 (a) for same reason as applied to claims 1-9 set forth in the previous office action. The recitation of "wherein the target construct, when introduced into...exhibits anti-depressive behavior when compared to a wild type mouse" is

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intended use for the claimed targeting construct. Such recitation does not carry patentable weight. Therefore, the rejection still applies to these claims.

Mansour et al. teach a strategy for targeted disruption of the *hprt* gene and proto-oncogene *int-2* in mouse embryonic stem cells and subsequent generation of knockout mice. Their teaching addresses the previous technical difficulty of obtaining embryonic stem cell carrying non-selectable, targeted gene mutation at loci of interest, and therefore provides a model which can be used to produce homozygous mutation of any gene, regardless of its function, if a cloned fragment of the gene is available (see page 348, second paragraph, line 1-3, third paragraph, line 1-5, and page 352, fourth paragraph, line 1-3). Mansour et al. further teach the generation of two targeting constructs, pRV9.1/TK and pINT-2-N/TK, each contains two sequences from an *hprt* gene and an *int-2* gene respectively, and a neo selection marker gene in between the two sequences (see page 350, figure 3). However, Mansour et al. do not teach how to make a NTTP1 target construct and knockout mouse.

Theodosiou et al. teach the molecular cloning and characterization of NTTP1, a member of the MAP kinase phosphatase family, from a mouse brain library (see page 676, col.1, 2nd paragraph). Theodosiou et al. further teach the nucleic acid and amino acid sequence encoding NTTP1 (see page 677, Figure 1). Theodosiou et al. also teach that NTTP1 belongs to dual-specificity tyrosine/threonine phosphatase family that is involved in MAP kinase signal transduction pathway (see page 681, 2nd col., last paragraph and page 682, 1st col., 2nd paragraph).

It would have been obvious to one of ordinary skill in the art at the time of filing to make a NTTP1 knockout construct to make a transgenic knockout mouse because of the combined

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teaching of Mansour et al. and Theodosiou et al., which provide a general method of making targeted disruption of specific gene in mouse genome to study its function and the importance in studying NTTP1 function. The ordinary artisan would have been motivated to do so to study the precise role of NTTP1 plays in cell signaling. The level of skill in the art of making gene targeting constructs and subsequently generating knockout mouse is high, absent evidence to the contrary, one of ordinary skill in the art would have reasonable expectation of success to make a NTTP1 targeting construct as claimed. Therefore, the invention would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claim Objections

Claim 28 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 25. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Conclusion

Claims 22-26 are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

This application contains claims 10-13 and 18-21 drawn to an invention nonelected with traverse in the amendment filed on 5/5/03. A complete reply to the final rejection must include

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cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Celine X Qian whose telephone number is 703-306-0283. The examiner can normally be reached on 9:00-5:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel Ph.D. can be reached on 703-305-1998. The fax phone number for the organization where this application or proceeding is assigned is 703-305-3014.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Celine Qian, Ph.D.

Anne-Marie Falk
ANNE-MARIE FALK, PH.D.
PRIMARY EXAMINER